ROUND POND HARBOR BRISTOL, MAINE

SURVEY

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.

MARCH 30, 1959

23

ARMY-NED-WALTHAM, MASS.

SURVEY

ROUND POND HARBOR

BRISTOL, MAINE

SYLLABUS

Navigation in Round Pond Harbor, Bristol, Maine, consists chiefly of lobster boats, although recreational craft, both local and transient, use the harbor. Vessel traffic in the area adjacent to the harbor's two wharves is subject to tidal delay due to inadequate depth of water in the approach channels to these two wharves and in the berths. The Division Engineer finds that although the construction of a basin approximately 600 feet long and 8 feet deep adjacent to the improved section of the waterfront as desired by local interests would eliminate these delay expenses, its construction is not economically justified. The Division Engineer further finds that the most economical solution to provide access to these wharves and eliminate practically all tidal delay expense would be to extend them to deep water. This work is considered to be entirely a local responsibility without any Federal participation. The Division Engineer recommends that no improvement of the locality be made at this time.

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U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 Trapelo Road
Waltham 54, Mass.

NEDGW 30 March 1959

SUBJECT: Survey of Round Pond Harbor, Bristol, Maine

TO: Chief of Engineers, Department of the Army
Washington, D.C.

AUTHORITY

1. This report on survey of Round Pond Harbor, Bristol, Maine is submitted in compliance with the River and Harbor Act of 1950 which directed that "a preliminary examination and survey be made ..... at Round Pond Harbor, Maine....."

2. Pursuant to the above authorization, a favorable preliminary examination report recommending a survey was submitted to the Chief of Engineers, November 29, 1955. The Board of Engineers for Rivers and Harbors concurred with the views of the reporting officer and recommended that a survey be made to determine the cost and extent of improvement warranted in Round Pond Harbor for the purpose of facilitating commercial navigation.

3. A review report of survey scope was assigned to the New England Division by letter of the Chief of Engineers, dated March 13, 1956.

PURPOSE AND EXTENT OF STUDY

4. This study considered the need for Federal navigation improvements. A detailed hydrographic survey consisting of soundings and probings was made, from which the character of the harbor bottom and estimated quantities to be dredged were determined. Engineering studies and an economic analysis has been made of the locally desired improvement.

5. A public hearing was held at Bristol, Maine on September 7, 1955 and information obtained therefrom is described under "Improvement Desired."

DESCRIPTION OF NAVIGATION CONDITIONS

6. Round Pond Harbor is located in the Town of Bristol, Lincoln County, Maine on the western shore of Muscongus Sound. It lies 50 miles by water northeast of Portland, Maine. The nearest adjacent

harbors are Muscongus, 2 miles to the northeast and New Harbor, about 5 miles to the southwest.

7. The harbor, formed by a natural indentation on the rocky coast line and being virtually landlocked, is protected from the north, south and west by the surrounding shore which rises steeply from the shoreline. Protection for the developed section of the waterfront from the east and the sea is furnished by Louds Island which lies about one mile offshore.

8. The entrance has a width of about 800 feet with depths of over 22 feet. The harbor proper covers an area of about 90 acres, 1/3 of which is bare at mean low water. Depths vary from 22 feet at mean low water in the outer portion to about 1 to 2 feet at the two major wharves. The harbor affords natural anchorage of approximately 27 acres with depths of 8 feet or greater at mean low water, and about 30 acres with depths in excess of 6 feet. The mean range of tide is 9.0 feet and the spring range is 10.4 feet. There is practically no flood current off the entrance to Round Pond; the ebb has a velocity of 1/2 knot at strength. In severe winters, ice closes the harbor to navigation for a period of 2 to 3 months.

9. Three small streams enter the harbor from the natural watershed of the area. Two flow in a generally southerly direction into its northern end while the third flows northerly and empties into the extreme southern end of the harbor. Local interests claim that these streams carry considerable silt which is gradually filling the harbor. A comparison between the latest survey, made in 1957, and a previous survey, made in 1867, shows that the area of the harbor having a depth of 6 feet or greater has decreased from 32 acres to 30 acres over a period of 90 years.

10. The locality is shown on United States Coast and Geodetic Survey Charts Nos. 313, 1204 and on the plan accompanying this report.

TRIBUTARY AREA

11. Round Pond is a small village in the town of Bristol, Maine. In 1950 the latter had a population of 1,476 and an assessed property valuation of $1,036,000. Round Pond Harbor is a small harbor utilized principally by fishermen with some pleasure craft usage during the summer months. It is the mainland terminus for the people residing on a number of islands in Muscongus Bay.

12. Round Pond Harbor lies close to the lobster grounds in Muscongus Bay and is used by fishermen as a home port and for the sale of their catch. Being practically landlocked the area is also used as a harbor of refuge and stopover for fishing vessels and cruising pleasure craft. This harbor together with New Harbor, a small Federally improved harbor about 5 miles to the southwest, furnish the only sheltered

anchorages on the west side of Muscongus Sound. Good roads extend along the harbor shore and connect with paved highways. The nearest railroad connection is at Newcastle, about 9 miles distant.

BRIDGES AFFECTING NAVIGATION

13. No bridges cross Round Pond Harbor.

PRIOR REPORTS

14. The only prior report on Round Pond Harbor was the preliminary examination submitted November 29, 1955. This report recommended a survey to determine the extent and cost of such improvement as may be justified.

EXISTING CORPS OF ENGINEERS' PROJECT

15. There is no existing Corps of Engineers' Project for Round Pond Harbor.

LOCAL COOPERATION ON EXISTING AND PRIOR PROJECTS

16. No work was ever done under previously prescribed conditions of local cooperation. This is the first instance in which the residents of Round Pond, Maine have requested Federal improvement for their locality. No local cooperation was required for the Federal project at New Harbor.

OTHER IMPROVEMENTS

17. Local interests have provided a small public pier and landing float with adjacent parking space. The Round Pond Village Improvement Society, a non-profit volunvary organization of residents, maintains this landing. There is also a privately owned pier which is open to the public and used for landing lobsters and obtaining fuel and bait.

TERMINAL AND TRANSFER FACILITIES

18. There are two landings open to the public. The Village Improvement Society landing is a timber pier 6 feet wide on timber piles and rock filled cribwork with a landing float at the outer end. The depth of water is 1.5 feet below mean low water at the outer end of the pier and 2 to 3 feet at the float. The pier and float are in fair condition. Parking facilities are available adjacent to the pier but no provisions are available for water or fuel.

19. A second pier, owned by the Hind's Lobster Company, is open to the public. This pier, constructed of a combination of retaining walls with solid fill and piles and timber, is 180 feet long and

12.5 feet wide. Depths alongside vary from 0 to 2 feet above mean low water. It provides facilities for fuel, water and other necessities. Adequate highway connections are available at each pier. Each of these piers is inaccessible by boat at lower stages of the tide. There are several private landings along the harbor water front. Unused frontage is available for expansion of terminal facilities when required although it is unlikely it would be developed because of the high cost to provide access to navigable water.

IMPROVEMENTS DESIRED

20. A public hearing was held September 7, 1955 in Bristol, Maine in order to give interested parties an opportunity to express their views concerning Federal improvement for Round Pond Harbor. The hearing was attended by representatives of the Department of Sea and Shore Fisheries of the State of Maine, and local government, and fishing and yachting interests.

21. All present concurred in their request that a basin 600 feet long in front of the improved shore frontage be dredged to a depth of 8 feet at mean low water in order to provide better anchorage facilities for fishing boats, provide access to the harbor's two wharves at low water, encourage the growth of the lobster and fishing industries, encourage transient yachts to visit the harbor and add to Round Pond's natural advantages as a harbor of refuge.

22. A representative of the Sea and Shore Fisheries of the State of Maine stated that his department favored the project and would furnish what aid it could as a state department. A selectman stated that he and the other two selectmen of the town were in favor of having the harbor dredged.

23. A representative of the Village Improvement Society which maintains one of the piers stated that shoaling of the harbor to a depth of two feet at mean low water along the improved shore frontage has made Round Pond dependent on the tides to conduct its waterborne commerce. Boat owners must wait until half tide before bringing their boats alongside the wharves to land their catch or obtain fuel and purchase bait. Some pilings located southeast of the Village Improvement Society's wharf are all that is left of an old steamboat wharf and cause additional difficulties to navigation.

24. A spokesman for the desired improvement stated that fishing vessels from Round Pond and outlying areas are sometimes subject to tidal delays of three to four hours while waiting to dock alongside the wharves in order to discharge their cargoes of lobsters or to take on fuel and bait. He estimated that dredging of the harbor would increase the fishing fleet by 50 percent, the recreational fleet by 25 percent revive the hand-line fishing and trawling industries and increase the amount of herring seined from Round Pond Harbor proper.

25. Another spokesman stated that the Round Pond area has been surveyed for the purpose of erecting a fish meal processing plant or sardine factory if facilities were adequate since New Harbor, about 5 miles to the southwest and home of the largest purse seining fleet on the Maine coast, is crowded and does not have room for such expansion. He further stated that Round Pond meets all requirements except for the fact that the cost of building a wharf is prohibitive.

26. A lobsterman stated that boats sometimes ground out after docking along side the wharves and must wait for the next tide before leaving. Dredging would eliminate this problem and increase use of the harbor by fishermen from Muscongus and Louds Island.

27. Yachting interests stated that old pilings southeast of the Village Improvement Society's landing are an obstruction and menace to transient craft. Cruising yachtsmen sometimes forced to take shelter in the harbor are seldom able to bring their deep-keeled boats alongside the wharves to fuel or provision. On one occasion it is claimed that 26 yachts stopping at Round Pond Harbor on their annual cruise from Marblehead Harbor, Massachusetts were forced to "raft-up" due to limited space. The desired improvement would allow the fishing fleet to take up permanent moorings closer to the wharves and provide extra anchorage area in deeper water for these transient craft.

28. A contract mail carrier for the Post Office Department said that under present conditions at low tide, mail, people and groceries must be transferred to and from the wharves in dories.

29. A spokesman for the Village Improvement Society stated his organization would endeavor to dredge out to the basin constructed by the Army Engineers and that a property owner has offered an area in which to dispose of the dredged materials.

EXISTING AND PROSPECTIVE COMMERCE

30. No detailed records are kept of commerce in Round Pond Harbor. The harbor is used principally by lobster fishermen. Based on comparison with other harbors the size of the local fleet, estimates of the number of trips per year and average catch per trip, it is estimated that the annual catch by Round Pond and Louds Island boats is about 340 tons of lobster. Part of this catch is probably landed at New Harbor, where there are 3 dealers in operation all year long.

31. The permanent fishing fleet based at Round Pond Harbor consists of an inboard fishing fleet of 23 vessels valued at $38,600. There is also a number of fishing dories with outboard motors. A pleasure craft fleet of 18 vessels has a value of $24,700.

32. Local interests claim improvement of harbor facilities would increase vessel traffic. Some fishermen would change from small outboards to larger inboard boats, extending their fishing season and increasing their average catch. It is also claimed that there would be increased use of the harbor by cruising pleasure craft because of Round Pond's natural facilities as a harbor of refuge.

VESSEL TRAFFIC

33. Round Pond Harbor is used principally by vessels engaged in lobster fishing. No record is available to indicate the number of trips by vessels using the harbor although present information indicates that about 9,000 landings are made annually. The local fishing fleet consists of 23 inboard motor boats with lengths from 16 to 40 feet and drafts from 2 to $3\frac{1}{2}$ feet and 18 dories with outboard motors. There are also 13 inboard motor boats and seven outboard motor boats from nearby islands whose owners purchase supplies and sell their catch at Round Pond Harbor. In addition, there are 18 pleasure boats based in the harbor with lengths from 15 to 30 feet and drafts to five feet.

34. The harbor is also used by the mail and freight boat which makes daily trips between Round Pond and the inhabited islands in Muscongus Bay. All the supplies for 40 island families are transshipped at Round Pond.

35. Local interests state that the average annual number of trips per boat is difficult to ascertain with an appreciable degree of accuracy. However, they claim that a safe estimate for the inboard lobster boats would be about 250 to 300 trips per boat annually. These trips range from 6 to 14 hours in duration. In comparison with other harbors in the area the number of annual trips claimed is high. Furthermore the harbor freezes over in winter for a period of 2 to 3 months, during which time it is not navigable. Allowing for Sundays, bad weather and the period when the harbor is frozen over, an average of 175 round trips per boat annually is considered more reasonable. It is estimated that the smaller dories equipped with outboard motors make an average of about 150 round trips annually. Local interests claim the inboard lobster boats from Louds Island and other outlying islands land their catch about 3 times a week at Round Pond Harbor. Allowing for bad weather and the period when the harbor is frozen over it is estimated that about 124 landings annually are made by these vessels. It is estimated that the mail and passenger boat operating between Louds Island and Round Pond Harbor makes an average of about 240 trips annually.

DIFFICULTIES ATTENDING NAVIGATION

36. The main difficulties claimed by local interests in navigating Round Pond Harbor are associated with anchoring boats and having access to and from the wharves at all stages of tide. Anchorage in the harbor is limited to deep areas in mid-harbor located at a considerable distance from shore. As a result, some boats anchor in shoal areas and at times become grounded. Because of lack of depth vessels cannot reach the wharves to be unloaded or take on supplies at the lower tidal stages.

WATER POWER AND OTHER SPECIAL SUBJECTS

37. The waterway under consideration is tidal. There are no problems involved in this investigation pertaining to water power, flood control, pollution, or related subjects. The contemplated work should have no adverse effect on wildlife or shellfish.

PLAN OF IMPROVEMENT

38. At a public hearing held September 7, 1955 in Bristol, Maine local interests requested dredging a basin approximately 600 feet long to a depth of 8 feet comprising an area of 3.5 acres adjacent to the improved section of the water front to provide suitable depths for fishing craft which are now dependent on the tides for landing their catch, or obtaining fuel. This plan would provide a maneuvering area, give the fishing boats access to the wharves at all times, and also permit some of them to anchor closer to the shore, leaving a larger area available to local and transient recreational craft.

SHORE LINE CHANGES

39. The shores of the harbor are composed of bedrock and boulders fronted by mud flats at low tide. The improvement requested by local interests involves enlargement of the existing anchorage area and providing an access channel to the wharves. This work will have no adverse effect on the configuration of the adjacent shore line.

REQUIRED AIDS TO NAVIGATION

40. The Coast Guard has been consulted and finds that no necessity exists for the Federal Government to provide any aids to navigation.

ESTIMATES OF FIRST COST

41. The first cost of construction of the desired improvement has been estimated. The Federal work required consists of dredging about 33,000 cubic yards of ordinary material and removal of about 3,500 cubic yards of rock to provide a basin 8 feet deep and 3.5 acres in

area adjacent to the present landings. Non-Federal work to improve the wharves and berths would also be needed. Local costs for wharf and berth improvements are considered to be self-liquidating and have not been included in the economic evaluation of the desired improvement. An estimate of the cost of this work is given under Proposed Local Cooperation. The costs summarized below are explained in detail in an appendix to this report:

Project Construction

Anchorage Dredging (including contingencies)	$100,000
Rock Removal (including contingencies)	175,000
Engineering and Design	5,000
Supervision and Administration	20,000
Total Construction Cost	$300,000
Preauthorization Study Costs	9,000
Total Project Cost (Jan 1959)	$309,000

ESTIMATES OF ANNUAL CHARGES

42. The estimated annual charges have been computed on an assumed project life of 50 years with an interest rate of 2.5 percent on Federal and non-Federal public investment. Maintenance costs are based on experience with a typical mud, sand and gravel harbor. Required local cooperation including cash contribution, are indicated in Paragraphs 58 to 60. The estimated annual carrying charge for the desired plan of improvement is as follows:

Investment

Construction (Corps of Engineers)	$300,000
Preauthorization Studies (Corps of Engineers)	9,000
Aids to Navigation (Coast Guard)	None
Total Investment	$309,000

Annual Carrying Charge

Interest (0.025 x $309,000)	$7,700
Amortization (0.01026 x $309,000)	3,200
Maintenance	2,100
Total Annual Carrying Charge	$13,000

ESTIMATES OF BENEFITS

43. Local interests claim that the proposed dredging would provide the following benefits for Round Pond Harbor:

a. Improvement of docking and anchoring conditions which would eliminate tidal delay to commercial fishing boats with accompanying increase in catch.

b. Provision of additional anchorage area allowing expansion of the existing lobster fleet and increasing Round Pond's natural advantages as a harbor of refuge.

44. Lobster fishermen in Round Pond depend on two wharves, both of which are open to the public, for docking their craft. One, privately owned, has facilities for purchasing lobsters and selling fuel and bait, while the other, owned by the Village Improvement Society of Round Pond, is used only to tie alongside. Both are situated in an area where there is a depth of zero to two feet of water at mean low water and since inboard lobster boats using these facilities have drafts of 2 to 3½ feet they are subject to tidal delay and inconvenience while waiting to provision or sell their catch. Part of the delay is the result of inadequate depths in the berths. The desired improvement would eliminate the delay in the approaches to the berths. The larger fishing craft need an average of 1 foot of tide to reach the berth area at the landings without delay. Because the tide is less than 1 foot for 2.7 hours of the tide cycle the average delay is estimated at 0.3 hours per trip.

45. The lobstermen operating the larger inboard boats from Round Pond average 175 trips per year and catch an average of 14,000 pounds of lobster. Based on this catch and using an 8 hour active fishing day the hourly catch is about 10 pounds worth, at the present average value of $0.40, $4.00. Elimination of the 0.3 hour average delay would permit the Round Pond fishermen to fish an additional 53 hours in which they could catch an additional $210 worth of lobster without any additional cost for operation. In the same manner the fishermen from Louds Island that average 124 trips into Round Pond annually would be able to fish an additional 37 hours in which they could catch lobster worth $150.

46. Local interests have stated that the present fleet of inboard lobster boats would be increased over the life of a project. Such a growth in the fleet is reasonable and it is estimated that the number of inboard boats in Round Pond would increase from the present 23 to 26 boats. The Louds Island fleet is expected to increase from 13 to 15 boats.

47. The benefit from the desired improvement resulting from elimination of tidal delays is therefore estimated to be $210 for each of the 26 reasonably prospective Round Pond boats, or $5,500, and $150 for each of the 15 Louds Island boats, or $2,300. The total value of the additional lobster caught because of the elimination of tidal delay at Round Pond is evaluated at $7,800.

48. In view of the relatively small per boat value of the cost of present tidal delays it is not considered that any fisherman is now prevented from operating an inboard boat for this reason. It is therefore considered that no additional lobster boats would be added to the fleet because of construction of the desired improvement.

What about paragraph 46 ?

49. The operator of the mail and passenger boat plying between Louds Island and Round Pond claims that it is necessary to transfer mail, supplies and passengers into smaller dories at the lower stages of tide in order to reach the shore. In estimating benefits for this craft, it is considered that this vessel is subject to a tidal delay of 0.5 hours per trip and the vessel operating costs are $2.75 per hour. Savings to this craft would approximate $300.00 based on an average of 240 trips per year.

50. The recreational fleet of the harbor would also benefit from the improvement. The value of this benefit is estimated to be a part of the annual net return to the owners if they chartered their boats to others. Cruisers and inboard motor boats must wait for sufficient tide to reach the wharf for fuel and supplies. Sail boats with their deeper keels can only reach the wharf on the higher stages of tide. It is estimated that the cruisers and inboard motor boats can now be used only approximately 80 percent of the time and the sailboats only about 75 percent of the time. The contemplated improvement of the harbor would eliminate the difficulties now encountered, increase the cruising time of these boats and the owners would be able to receive 100 percent use of their boats. The composition of the existing fleet, the estimated total present value of each type, the percentage value taken as a reasonable annual return on a for-hire basis and the net annual benefit are listed in the following table:

RECREATIONAL BOAT BENEFITS

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	PERCENT RETURN % OF IDEAL Pres.	PERCENT RETURN % OF IDEAL Future	PERCENT RETURN GAIN	BENEFIT $
RECREATIONAL FLEET									
Outboards	10-20	6	380	2,300	10	100	100	0	0
Inboards	10-20	2	850	1,700	10	80	100	2	40
Cruisers	15-30	4	2,750	11,000	9	80	100	2	220
Sailboats	10-20	3	1,000	3,000	12	75	100	3	90
	21-30	3	2,330	7,000	12	75	100	3	210
TOTALS		18		25,000					560

51. In addition to benefits resulting from increased use of the present fleet, it is considered that improvement of the harbor would encourage the purchase of additional craft. Local interests estimated that the fleet would increase 25 percent if the contemplated improvement was provided. Based on a 25 percent increase it is considered that the fleet can be expected to increase by the addition of 1 outboard of shallow draft, 2 new cruisers valued at $6,000 each and 2 new inboard motor boats valued at $3,000 each. The estimated annual return on these boats on a for-hire basis, assuming 9 percent of the depreciated value as a reasonable percentage return on cruisers, and 10 percent on inboards is $840. Inasmuch as these boats would realize the entire benefits possible from such craft, the benefit to such boats, accruing from the proposed improvement, is considered to be equivalent to the entire annual return of $840. No benefit is taken for outboards of shallow draft.

52. Other benefits might possibly stem from the improvement. Interested parties have surveyed the Round Pond area for the purpose of erecting a sardine factory or fish meal processing plant since New Harbor, the nearest adjacent harbor, is crowded and the presence of ledge rock makes expansion difficult. However, it is not considered that the desired improvement would materially affect this possibility.

53. Handlining and trawling were thriving springtime activities in years when harbor facilities were more adequate and their resumption is envisioned with the deepening of the harbor. Herring seining is an extensive activity in waters off the Maine coast and it is believed by local interests that deepening of Round Pondwould lead to an increase in catch taken from the harbor proper. This catch depends on trapping the fish in the harbor and it is not believed that the desired improvement would induce more fish to enter the harbor.

54. Many fishermen load their bait at night to take advantage of the tide. This practice, considered to be dangerous, would be eliminated. The benefit has been evaluated above in terms of the increased catch resulting from elimination of tidal delays.

55. The desired improvement would allow part of the lobster fleet to moor closer to the wharves, leaving the outer portion of the harbor to transient yachts and fishing boats, increasing Round Pond's natural advantages as a harbor of refuge. This benefit is considered to be too slight to be evaluated.

56. The tangible benefits which are estimated to accrue from the proposed improvement of Round Pond Harbor are summarized below:

Source of Benefit	Amount General	Amount Local	Total Benefit
Increased fishing catch by Inboard lobster boats	$7,800		$7,800
Reduction in operating costs to Mail and Passenger boat from Louds Island	300		300
Increased benefits to present Recreational fleet	280	280	560
Benefits to prospective local Recreational fleet	420	420	840
Total	$8,800	$700	$9,500
Percent of total	93%	7%	100%

COMPARISON OF BENEFITS AND COSTS

57. A comparison of the estimated annual benefits totalling $9,500 and the estimated annual charges totalling $13,000 results in a benefit cost ratio of 0.7 to 1.

PROPOSED LOCAL COOPERATION

58. If the desired improvement was to be constructed there would be certain requirements of local cooperation. One-half of the benefits to recreational boating are considered to be local benefits. Although no allocation of costs has been made the local benefits are about 7 percent of the total evaluated benefits which would indicate a probable local cash contribution of about $20,000 toward the cost of dredging the basin.

59. Local interests would also be required to provide without cost to the United States all lands, easements, rights-of-way for the construction and maintenance of the project when and as required, and hold and save the United States free from damages that may result from the construction works and maintenance of the project.

60. Local interests would be required to provide and maintain without cost to the United States an adequate public landing open to all on equal terms and should be required to make wharf and berth improvements, to coincide with Federal improvement. Wharf and berth improvements to match the Federal improvement are estimated to cost about $10,000 at the Village Improvement Society wharf and about $65,000 at the Hinds Lobster Company wharf.

COORDINATION WITH OTHER AGENCIES

61. All Federal, State and local agencies having interests in the development and use of waterways were notified of the hearing held at Bristol, Maine, September 7, 1955. All agencies that expressed an interest in the harbor were in favor of the desired plan of improvement.

DISCUSSION

62. Round Pond Harbor is located in the Town of Bristol, Lincoln County, Maine on the western shore of Muscongus Sound, 50 miles by water northeast of Portland, Maine. The nearest adjacent harbors are Muscongus 2 miles to the northeast, and New Harbor, about 5 miles to the southwest. New Harbor is active in the fishing and lobster industry and has been improved by the Federal Government. Round Pond Harbor, formed by a natural indentation in the rocky coast line, is landlocked on the north, south and west by the surrounding shore which rises steeply from the shoreline and is protected from the east and the sea by Louds Island which lies about one mile offshore. Three small streams empty into the harbor from the natural watershed of the area and are believed by local interest to be carrying the silt which is claimed to be filling in the harbor. In severe winters ice closes the harbor to navigation for a period of 2 to 3 months.

63. Lobster fishing is the main industry of the area and the harbor is used by a total of 61 fishermen from both Round Pond and Louds Island to market their catch. Twenty-three inboard lobster boats and 18 dories, equipped with outboards, base at Round Pond while 13 inboards and 7 outboards base at Louds Island. The latter usually make the trip from Louds Island with the owner of an inboard lobster boat when selling their catch. Supplies, mail and passengers are transferred to Louds Island by a mail boat which makes daily trips from Round Pond Harbor to the inhabited islands in Muscongus Bay. The recreational fleet consists of 18 boats, mostly of the smaller cruiser and sail type. The harbor is also used by transient yachts and fishing boats as a harbor of refuge.

64. Round Pond interests desire dredging a basin 600 feet long to a depth of 8 feet at mean low water from the area adjacent to the wharves to the 8-foot contour line of the harbor in order to:

a. Eliminate tidal delay to fishing boat owners who are dependent on the tides to land their catch, fuel their boats and purchase bait.

b. Eliminate the necessity of transferring provisions, passengers, and mail by dory to and from the Louds Island mail boat at lower tidal stages.

c. Provide more anchorage area and encourage expansion of the existing lobster fleet.

d. Encourage construction of a fish meal processing plant or sardine factory in the Round Pond Harbor area.

e. Revive handlining and trawling activities.

f. Increase the amount of herring seined in Round Pond Harbor.

g. Encourage transient yachts to visit Round Pond and augment its natural facilities as a harbor of refuge.

65. The plan of improvement requested by local interests and as considered by the Corps of Engineers consists of dredging a basin approximately 3.5 acres in area to a depth of 8 feet adjacent to the improved section of the water front. This improvement would eliminate tidal delay to loster boats resulting in an increased lobster catch, the present inconvenience to the mail boat and make the recreational fleet more easily available at lower tidal stages. It would also provide a maneuvering area and permit some of the harbor's fishing boats to anchor closer to the shore.

66. However, an increase of 50 percent in the size of the local fishing fleet as a result of the improvement as anticipated by local interests is optimistic. A more reasonable appraisal of the situation would base the increase in the fishing fleet in direct ratio to an anticipated 15 percent increase in population over the life of the project. This would add 3 boats to the Round Pond fishing fleet, and 2 boats to the Louds Island fleet. The small per boat return possible from the improvement makes it very unlikely that any fisherman is prevented from operating by lack of the desired improvement. It is therefore considered that the reasonably prospective increase in the number of lobster boats would result from natural growth and not because of the desired improvement. The recreational fleet would gain from an increase of 20 to 25 percent in use and additional craft would be attracted by improvement. The total annual benefits accruing to Round Pond Harbor from increased fish catch by the present and prospective fishing fleet, elimination of delays to the mail boat and and the recreational fleet amount to $9,500. The estimated annual costs of $13,000 and evaluated benefits of $9,500 indicate a benefit-cost ratio of 0.7 to 1.

67. Construction of a fish meal plant or sardine factory, revival of the handlining and trawling industries or increasing the amount of herring seined from Round Pond Harbor itself due to the improvement are envisioned as possibilities since no direct evidence exists as to their actually occurring. Dredging the basin desired by local interests, it is believed, would not materially influence the construction of a fish meal processing plant or a sardine factory. Factors against its construction would be the higher cost to provide access to the dredged basin, and the inability to use year-round water transportation since ice closes the harbor for a period of 2 to 3 months during severe winters. Dredging would increase Round Pond's natural facilities as a harbor of refuge for transient yachts and fishing boats, but consistent use of the harbor, though it offers an excellent anchorage for cruising yachtsmen, is doubtful due to the absence of recreational or boatyard facilities.

68. It is apparent that lack of anchorage space at Round Pond Harbor is not one of the factors contributing to the difficulties attending navigation as claimed by local interests. The natural anchorage provides for 30 acres with water depths of 6 feet or greater and 27 acres with depths of 8 feet or more. Depths over the 30-acre area average 12 feet varying from 6 feet to 22 feet. Only approximately 50 percent of the existing natural anchorage is needed to accomodate the present Round Pond Harbor fleet of fishing and recreational craft, the fishing fleet and mail and passenger boat from the nearby islands that regularly use Round Pond Harbor, and the anticipated increase in the fishing and recreational fleet. There still remains natural anchorage for transient craft that visit the harbor or for a 50 percent expansion over its present and anticipated use.

69. The claim that 26 yachts stopping at Round Pond Harbor on their annual cruise from Marblehead Harbor were forced to "raft-up" due to limited space, may be questioned. Unless there were more boats in the harbor that the present existing and prospective fleet it is more likely that the occupants of the 26 yachts choose to "raft-up" as a matter of convenience rather than for lack of space.

70. With the claim by local interests for much needed anchorage space eliminated, the remaining problem is to provide access to the two existing wharves at all stages of tide. This can be accomplished by either dredging separate entrance channels to each of the two wharves or extending the two wharves out to deep water or a combination of wharf extension and approach channel dredging.

71. Dredging separate entrance channels 8 feet deep, one 50 feet wide with a turning basin to Hinds Lobster Company wharf, and the other 100 feet wide to the Village Improvement Society wharf would require the removal of approximately 2,500 cubic yards of ledge rock and 12,000 cubic yards of ordinary material at a total cost of approximately $200,000. Of this amount approximately $100,000 would be for the removal of ledge rock in Hinds Lobster Company berth.

72. An extension constructed on the end of each of the wharves comparable to the existing structures would require constructing a pile and timber wharf 440 feet long and 12 feet wide at the Hinds Lobster Company wharf and a pile and timber wharf 160 feet long and 7 feet wide at the Village Improvement Society wharf. Each wharf would extend into the harbor to the 8-foot depth curve. The portion of the Hinds Lobster Company extension passing over ledge rock, where sufficient penetration cannot be obtained with timber piles, could be constructed with either concrete piles or rock-filled cribwork. It is estimated that the cost of the 440-foot extension to the Hinds Lobster Company wharf would be approximately $30,000 and the 160-foot extension to the Village Improvement Society wharf would be about $6,000. The total cost to extend both wharves to the 8-foot depth curve would be approximately $36,000.

73. A combination of wharf extension and channel dredging would require construction of a pile and timber wharf 180 feet long and 12 feet wide at the Hinds Lobster Company wharf and a wharf 160 feet long and 7 feet wide at the Village Improvement Society wharf. It would also require dredging a channel 50 feet wide with a turning basin to meet the wharf extension at the Hinds Lobster Company. The total cost for this combination would be approximately $40,000.

74. From the comparison of costs in Paragraphs 71 to 73, it is apparent that the most economical solution to provide access to the two existing wharves at all tidal stages would be to extend them out to deep water. This work is considered to be entirely a local responsibility without any Federal participation. It is also noted that this would cost considerably less than the $75,000 estimated for the wharf and berth improvements needed to make effective use of the desired Federal improvement.

CONCLUSIONS

75. The Division Engineer concludes that the existing 0 to 2 feet depths at mean low water adjacent to the two existing wharves at Round Pond Harbor are inadequate for craft engaged in lobster fishing and pleasure use. However, an unfavorable benefit-cost ratio of 0.7 to 1 indicates that construction of a basin approximately 600 feet long and 8 feet deep adjacent to the improved section of the waterfront as desired by local interests is not economically justified.

76. He further concludes that lack of anchorage space at Round Pond Harbor is not one of the factors contributing to the difficulties attending navigation. Natural anchorage provides sufficient space for the anticipated increase in the fishing and recreational fleet. There still remains natural anchorage for transit craft that visit the harbor or for a 50 percent expansion over its present and anticipated use.

77. The main difficulty attending navigation is lack of access to the two existing wharves at all tidal stages. The most economical solution to provide access to the two existing wharves at all tidal stages would be to extend them out to deep water. This work is considered to be entirely a local responsibility without any Federal participation.

RECOMMENDATIONS

78. The Division Engineer recommends that no improvement of Round Pond Harbor, Bristol, Maine be undertaken at this time.

2 Incls
1. Appendix
   Estimates of First Cost
2. Map

ALDEN K. SIBLEY
Brigadier General, U.S. Army
Division Engineer

CORPS OF ENGINEERS

U.S. ARMY

TOWN OF BRISTOL

ROUND POND

MAINE ROUTE 32

VILLAGE IMPROVEMENT SOCIETY

ALFRED HINDS LOBSTER CO.

Old piles, remains of old Steamboat Wharf, in this area. Top el. varies from 1.5 to 4.4 feet below M.L.W.

Top of pile 3.0

ROUND POND HARBOR

Flood

Ebb

MUSCONGUS SOUND

DESIRED IMPROVEMENT NOT RECOMMENDED

BASIN - Dredged to 8 feet at Mean Low Water

8' Contour

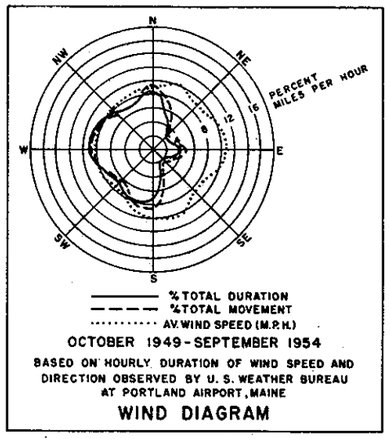
6' Contour

LEGEND

MEAN HIGH WATER +9.0 FEET

LEDGE OUTCROP

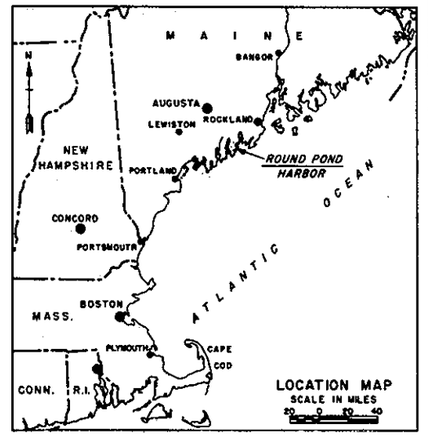
PROBINGS SHOWN THUS: ● P12

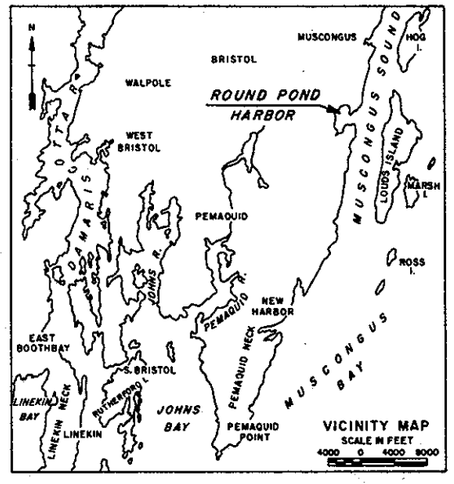


OCTOBER 1949 - SEPTEMBER 1954

BASED ON HOURLY DURATION OF WIND SPEED AND DIRECTION OBSERVED BY U. S. WEATHER BUREAU AT PORTLAND AIRPORT, MAINE

WIND DIAGRAM





LIST OF PROBINGS

NUMBER	DEPTH OF WATER (ELEVATION BELOW M.L.W.)	DEPTH OF PROBE (ELEVATION BELOW M.L.W.)	PENETRATION	MATERIAL
1	0.0	2.2	2.2	Gravel to ledge
2	1.3	10.1	8.8	Mud
3	2.8	10.0	7.2	"
4	6.2	12.2	6.0	"
5	2.0	6.3	4.3	Mud to ledge
6	2.9	10.1	7.2	" " "
7	+1.0	+1.0	0.0	Ledge
8	+1.3	5.7	7.0	Mud and gravel to ledge
9	+0.6	1.5	2.1	Mud, boulders
10	1.5	4.3	2.8	Mud and gravel to ledge
11	1.8	4.2	2.4	" " " "
12	2.0	10.9	8.9	Mud
13	2.0	8.9	6.9	Mud to ledge
14	1.0	10.0	9.0	Mud to refusal
15	3.6	10.2	6.6	Mud
16	6.6	10.5	3.9	"
17	5.4	10.4	5.0	"
18	3.4	10.1	6.7	"
19	1.9	10.0	8.1	Mud and hardpack sand
20	+0.3	+0.3	0.0	Ledge
21	+0.3	+0.3	0.0	"
22				Not located
23				Lone boulder
24	1.0	5.7	4.7	Mud to ledge
25	1.8	5.6	3.8	" " "
26	2.4	10.1	7.7	Mud
27	0.0	1.0	1.0	Mud and boulder
28	2.3	6.3	4.0	Mud, hardpack, refusal
29	3.9	10.3	6.4	Mud
30	7.3	10.5	3.2	"
31	7.2	10.8	3.6	"
32	3.5	8.8	5.3	Mud, hardpack, refusal
33	0.9	6.9	6.0	Mud, hardpack, boulders

NOTES:

Soundings and probings are in feet and tenths and are referred to the plane of Mean Low Water.

Hydrography from survey of June 1957 by the Corps of Engineers.

Topography from surveys of Dec. 1956 & June 1957 by Corps of Eng. and from U.S.C.&G.S. Topo. Map T-11130 N based on 1953 aerial photography.

Probings were taken with a 3/4" iron pipe forced down by 2 men. In addition, a 20 lb. hammer was used in taking probings 1 through 19 inclusive.

ROUND POND HARBOR MAINE

IN 1 SHEET

SCALE IN FEET 200 0 200 400 600 800 1000

NEW ENGLAND DIVISION, WALTHAM, MASS. MARCH 1959

APPROVED: Thos. W. Ladue, CHIEF ENGINEERING DIVISION

SURVEYED BY: [illegible], CHIEF, HYDROGRAPHIC SURVEYS BRANCH; [illegible], CHIEF, SURVEY AND MAPPING SECT.; [illegible], PROJECT ENGINEER; DR BY ALD; TR BY ALD; CH BY [illegible]

APPROVED: [illegible], COL., C.E. DEPUTY DIVISION ENGINEER

TO ACCOMPANY SURVEY REPORT DATED MARCH 30, 1959.

FILE NO. 1480 D-3-4

SURVEY OF ROUND POND HARBOR, BRISTOL, MAINE

APPENDIX

ESTIMATES OF FIRST COST

1. The first cost has been estimated for the desired improvement. The Federal construction consists of dredging a basin 3.5 acres to a depth of 8 feet near to the two landings. Non-Federal work consists of improving the two wharves and berths.

2. Probings taken in the hydrographic survey of the proposed Round Pond Harbor anchorage basin indicate that a considerable amount of ledge rock will be encountered within the limits of dredging of the desired improvement. In addition to the probings taken in the general area of the proposed anchorage basin, soundings were taken on lines spaced approximately 100 feet apart over the entire harbor. Except for ledge rock removal all dredging would be of ordinary material consisting of mud, sand and gravel. Dredging quantities are in terms of in-place measurement and provide for dredging to project depth in ordinary material and to one foot below project depth in ledge rock plus an allowance of one foot overdepth. Side slopes of 1 vertical on 3 horizontal in ordinary material and 1 vertical on 1 horizontal in ledge rock were used. Unit prices include contingencies and are based on prices prevailing in January 1959 and on removal of material by bucket dredge and scow and disposal at sea. The necessity of blasting and removal of broken rock is considered to eliminate the possibility of use of hydraulic dredging equipment.

3. The estimate of project cost is as follows:

PROJECT COST ESTIMATE (Amounts in Thousands of Dollars)

Cost Account No.	Item		Cost Estimate (January 1959)
09	CHANNELS		
	Dredging 8-foot Anchorage (33,000 c.y. of ordinary material @ $2.65	- 87.0	
	Contingencies @ 15%	- 13.0)	100.0
	Rock Removal (3,500 c.y. of ledge rock @ $45.00	- 155.0	
	Contingencies @ 15%	20.0)	175.0
29	PREAUTHORIZATION STUDIES		9.0
30	ENGINEERING AND DESIGN		5.0
31	SUPERVISION AND ADMINISTRATION		20.0
	TOTAL PROJECT COST		309.0

TOTAL PROJECT COSTS	309.0
TOTAL FEDERAL COST	288.0
NON-FEDERAL CONTRIBUTION (Based on 7% local benefits)	21.0

Non-Federal Costs

Cash Contribution	21.0
Wharf and Berth Improvements	
Village Improvement Society	10.0
Hinds Lobster Company	65.0
Total Non-Federal Costs	96.0

Contingency Allowance

Estimated Cost	275.0
Direct Cost	242.0
Contingency Allowance	33.0
Percent Contingencies	13